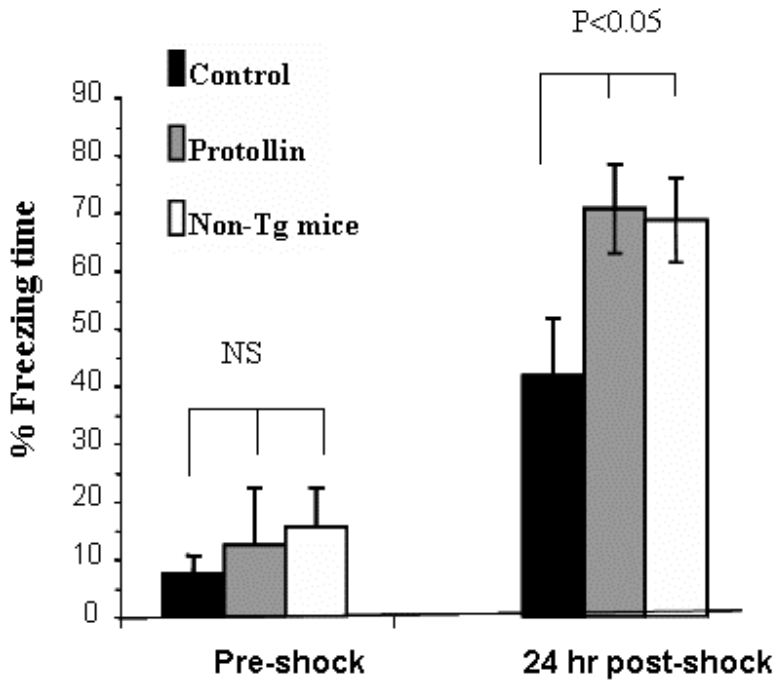
Supplementary Figure 1



Nasal Protollin improves memory function and decreases amyloid burden in 24 month old *APP* Tg mice. To investigate the effect of nasal Protollin in older animals with significant amyloid deposition, we administered nasal Protollin or nasal BSA to 24 month old mice weekly for six weeks and measured both amyloid deposition in the brain and memory function as assessed by contextual fear conditioning in which memory can be acquired in a single training session [1]. We tested a total of 23 mice. Analysis of variance (one way ANOVA) revealed that all groups showed similar levels of freezing during the training session (not significant) or immediately after the footshock (data not shown). However, one way ANOVA also revealed that there was a significant overall effect on the percentage of freezing time 24 hours after the footshock ($p < 0.05$). The *post-hoc* analysis shows that, BSA treated APP Tg mice exhibited significantly less freezing time (41.6% ± 10.0%; n = 7) than either Protollin treated APP Tg mice did (70.6% ± 7.6%; n = 7) ($p = 0.028$) or non-Tg mice did (68.6% ± 7.3%; n = 9) ($p = 0.03$). Furthermore, we found that Protollin treated APP Tg mice did not differ from non-Tg mice on the percentage of freezing time ($p > 0.8$). Thus, these results suggest that Protollin treatment rescued the impairment of long-term associative memory displayed by *APP* transgenic mice at this age.

Reference:

1. Saura CA, Chen G, Malkani S, Choi SY, Takahashi RH, Zhang D, Gouras GK, Kirkwood A, Morris RG, Shen J. Conditional inactivation of presenilin 1 prevents amyloid accumulation and temporarily rescues contextual and spatial working memory impairments in amyloid precursor protein transgenic mice. J Neurosci. 2005;25:6755-6764